

Central Intelligence Agency

DDI-648-82

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82-0115/1



Washington, D. C. 20505

26 JAN 1982

MEMORANDUM FOR: Deputy Under Secretary of Defense for  
International Programs and Technology

FROM: Robert M. Gates  
Deputy Director for Intelligence

SUBJECT: Applicability of General Electric Industrial  
Gas Turbine to Aircraft Use - Particularly for  
the BACKFIRE.

1. Agency analysts have reviewed data on the internal components of a US General Electric industrial turbine. These components, which were recently denied an export license, were to be used in the Soviet Yamal pipeline project. We have also reviewed intelligence data on Soviet capabilities to produce such internal components, also known as rotors, shafts, or hot gas path parts.

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2. The GE turbine, as well as similar turbines such as the British Rolls-Royce RB-211 engines, would have only subsonic application potential and hence could not be used for the Soviet BACKFIRE aircraft. The following profile of the GE turbine supports this judgement:

a. The GE MS-5002 industrial turbine utilizes old technology dating back to the 1950s and the "J47" and "J35" engines for the F86 and B47 aircraft.

b. The pressure ratio of the turbine ordered for the pipeline is less than 6:1 compared with about 20 to 25:1 for state-of-the-art turbines.

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c. The MS 5002 turbine is rated at an inlet temperature of less than 1700 degrees Fahrenheit compared with 2300 to 2800 degrees Fahrenheit [REDACTED]

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d. The MS 5002 turbine does not have provision for cooled turbine blades necessary on aircraft engines.

e. The MS 5002 industrial turbine does not offer the Soviets any aerodynamic or structural advance in technology over their indigenous state of the art. [REDACTED]

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3. Existing Soviet aircraft gas turbine engines being produced are already well ahead of J47 technology. We believe the Soviet FLOGGER aircraft has turbines rated at over 2000 degrees Fahrenheit, and the new Soviet D-36 high-bypass ratio turbofan turbine has a temperature rating over 2300 degrees Fahrenheit. Soviet claims for a new turbine for the TU-144 CHARGER also suggest that they have high-temperature technology. [REDACTED]

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Robert M. Gates

S E C R E T

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